REMARKS

Applicants respectfully request reconsideration of the application.

Objections to the Specification

The Office has maintained an objection to the specification on the basis that incorporated segmentation processes from papers by Vincent et al. (page 36), Saarinen (page 36), Fu et al. (page 37), and Haralick et al. (page 37) represent essential material for implementing embodiments of the invention. In order for this to be the case, the teachings of these references must be necessary to meet the requirements of 35 U.S.C. Section 112 for at least one claim.

Applicants believe that this objection is deficient for at least the following 4 reasons:

1. It does not identify a particular claim or claim element for which the referenced papers are essential, nor does the objection cite the particular ground within 35 U.S.C. Section 112 that is not satisfied for that claim or claim element (e.g., best mode, enablement, etc.).

2. The Office has taken the position that claim elements relating to sub-dividing a media signal into segments are taught in both the Vynne and Hawkins references. Therefore, based on the Office's reasoning, one of ordinary skill must be able to make and use this aspect of the claims based on known teachings. The enablement requirement must be met if the anticipation rejection was proper.

3. The specification not only cites these papers, but also provides additional teaching regarding how segmentation methods are implemented in embodiments. For example, see the text at page 36, lines 26-30, and page 37, lines 10-15. Therefore, the specification includes teachings on what form of segmentation may be used on how they may be implemented.

4. The segmentation methods referred to an item 3 above are only one example of several provided in the specification.

Grounds of Rejection to be Reviewed

Claims 2, 4, 18-24 and 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,960,081 by Vynne et al. ("Vynne").

Claims 2, 14-15, 20, 22, 29-30 and 32-33 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,389,421 to Hawkins et al. ("Hawkins").

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins in view of U.S. Patent No. 6,374,336 to Peters et al. ("Peters").

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vynne in view of U.S. Patent No. 6,473,516 to Kawaguchi et al. ("Kawaguchi").

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,611,830 to Shinoda in view of Vynne.

Argument

Vynne does not anticipate Claims 2, 4, 18-24 and 26-28

Claim 2

Vynne fails to teach distributing prioritized segments to parallel processors as claimed. The Examiner contends that Vynne's selection of blocks based on visibility criteria is a form of prioritization. However, Vynne does not prioritize blocks based on the visibility criteria prior to distributing them to parallel processors. In fact, Vynne teaches that the embedding system 610 of Fig. 6.1 and Fig. 16 is executed on different processors, and the selection of blocks based on visibility criteria occurs after distribution to the processors. Vynne teaches that blocks are divided among different processors at col. 27, lines 6-17, but Vynne also teaches that the blocks are selected based on visibility criteria at col. 27, lines 44-47 after the distribution of the blocks to the processors. Therefore, blocks are not distributed to the processors after they are prioritized as claimed.

In the response to Applicant's argument, the Office appears to have ignored the point that Vynne does not prioritize blocks prior to distributing them to parallel processors. Claim 2, as amended, clarifies this distinction. Vynne does not teach: "distributing the prioritized segments to parallel processors after the analyzing of the media signal to prioritize the segments. In Vynne, each processor performs block selection after an image is partitioned and distributed to different processor elements as shown in Fig. 7.2.

In addition, Vynne does not perform parallel digital watermark operations on the prioritized segments according to a priority order of the prioritized segments as claimed. The Examiner contends that Vynne's block selection corresponds to a two state prioritization

(presumably, selected and un-selected). However, Vynne does not perform parallel digital watermark operation on the selected blocks according to priority order.

Claim 4

Vynne fails to teach: "the media signal segments are prioritized such that segments that are more likely to carry a readable watermark signal are given higher priority for the embedding operations" as set forth in claim 4. The cited passage in col. 8 relates to retrieving a watermark, not prioritizing segments for watermark embedding as claimed. The cited passage in col. 33 fails to suggest this aspect of claim 4 as well, and in contrast, merely suggests that a sub-set of blocks should be selected for embedding to enable subsequent embedding in the blocks that are not selected. This passage has nothing to do with prioritizing segments for embedding based on likelihood that those blocks will carry a readable watermark signal.

Claim 4, as amended, clarifies that parallel digital watermark operations are performed on the prioritized segments in the parallel processors according to priority order of the prioritized segments. In Vynne, watermark operations are only performed on selected blocks, and parallel digital watermark operations are not performed on these selected blocks in priority order. Therefore, Vynne does not teach all of the elements of claim 4.

Claim 18

Vynne fails to teach: "the media signal is segmented and prioritized for parallel watermark decoding operations based on probability of watermark detection" as recited in claim 18. The cited passage in Vynne relates to generation of a binary random sequence (BRS), which is used to encode bits in selected blocks. The generation of the BRS and the dividing of the signature between blocks is unrelated to segmenting of the video into blocks in Vynne because the blocks are selected in a prior step without regard to the BRS. Therefore, the cited passage fails to teach or suggest this aspect of claim 18.

In response, the Examiner contends that Vynne's approach of dividing blocks into groups corresponds to this aspect of claim 18 because the groups have a size of a power of 2 for coding using a binary random sequence. The Examiner contends: "Thus, the number of blocks to be selected is based on probability of watermark detection." The cited approach in Vynne at cols.

22-24 relates to how a signature is coded into blocks of video to embed the signature into the video. In Vynne's retrieval method, the subset of blocks, $U_d(n)$ is selected based on criteria that is unrelated to the probabilistic coding procedure of cols. 22-24. Vynne is silent with regard to prioritizing the media signal for parallel watermark decoding operations based on the probability of watermark decoding operations.

Claim 19 is patentable for the same reasons as claim 18.

Claim 20

Claim 20 specifies that the watermark operations are performed by two or more watermark operation modules that perform a different watermark function, and the watermark operation modules operate in parallel such that a watermarking task for the media signal is distributed over the watermark operation modules performing different watermark functions on the media signal in parallel. Vynne fails to teach this aspect of claim 20 because each processing unit in Vynne's system performs the same embedding function in parallel. In other words, Vynne operates on different parts of video in parallel using the same watermarking function, but does not teach performing different watermarking functions on the different parts of the video in parallel.

In response, the Examiner contends that because blocks carry different portions of a bit sequence, the processors must be different. However, just because the data carried in the block may be different does not mean that the watermark function performed on the block must be different. In fact, the function of each processor is the same and only the data that is embedded is potentially different.

Claim 22 is now dependent on claim 20 and is patentable for the same reasons as claim 20.

Claim 21

Claim 21 is further distinguishable over Vynne because it specifies the different watermark operation modules that operate in parallel. Vynne does not teach these different watermark operation modules operating in parallel as claimed. Vynne executes the same function in parallel across different processors, but does not teach watermark generator, a perceptual analyzer and a watermark applicator operate on the media signal in parallel.

The Examiner has not rebutted this argument, and cannot do so because Vynne does not teach the elements of claim 21.

Claim 23

Claim 23 corresponds to original claim 25, rewritten in independent form. The cited art fails to teach the claimed re-use of a perceptual mask to embed variable watermarks in copies of the media signal as claimed.

In response, the Examiner contends that applicants have not provided a detailed reason why the cited passages do not meet the requirement. Previously, the Examiner contended that: "The criteria thresholds as those listed in column 22, lines 1-9 are the mask that is used for selecting blocks for watermarking." The Examiner also contended that the perceptual analyzer corresponds to the "criteria 612" in Vynne. Assuming this to be true, then Vynne's "perceptual analyzer" (the "criteria 612" according to the Examiner) does not generate the perceptual mask (the "criteria thresholds" according to the Examiner). Under this reasoning, the criteria thresholds are not a perceptual mask because they are not generated "by executing the perceptual analyzer on the media signal" as claimed. Instead, the criteria thresholds are manually selected and adjusted by the user in response to viewing the effect of those adjustments through Direct View.

Dependent claims 24 and 26-28 are patentable over the cited art for the same reasons as claim 23.

Hawkins Does not Anticipate Claims 2, 14-15, 20, 22, 29-30 and 32-33

Claim 2

The Examiner contends that "the media signal is divided based on jobs, each job is a segment of media signal." In Hawkins, a job is a processing task. While a processing task may be performed on an image, Hawkins does not subdivide an image into segments and distribute prioritized segments of an image. The only way to lend any validity to the Examiner's assertion that Hawkins teaches "the media signal is divided based on jobs" is to take the position that the media signal is interpreted broadly enough to encompass different media objects (e.g., Hawkins assigns jobs for separate images; thus, these images would have to be combined to form the

Examiner's concept of media signal). Claim 2 now refers to sub-dividing the media object into segments. Hawkins does not sub-divide a media object into segments as claimed. Hawkins refers to putting a data object to be processed into a list for a particular processing job. In Hawkins, there is one data object per job; Hawkins does not teach dividing the data object based on jobs.

Claim 14

Hawkins fails to teach: "sub-dividing the media object into segments...wherein the media object is segmented into blocks based on a memory parameter of processing hardware." Hawkins fails to teach sub-dividing the media object into segments" for distribution of those segments to parallel processors as claimed. The passage cited in col. 10 of Hawkins relates to allocation of processing resources in a work scheduler based on cost. While Hawkins mentions that size of the data object may be considered in determining this cost, Hawkins fails to make any relationship between the size of the data object and any form of sub-dividing of a media object into segments for distribution to parallel processors as claimed.

In the Examiner's response, the Examiner is inferring teachings that are not present in Hawkins. Hawkins does not teach or suggest that a data object, such as the large image referred to in the cited passage at col. 12, lines 25-39 is sub-divided into segments and the segments processed as set forth in claim 14.

Claims 15

Claim 15 is patentable over Hawkins for the same reasons as claim 14, and in addition, includes further elements that distinguish it from Hawkins. The cited passages fail to suggest the use of a memory unit used to swap data into system memory in a virtual memory system as a parameter for segmenting a media object into blocks for distribution to parallel processors as claimed.

Claims 20 and 22

Hawkins also fails to disclose this aspect of claim 20. As noted earlier, Hawkins does not teach sub-dividing a media signal for distribution to parallel processors as claimed, and further,

does not teach performing different watermarking functions on the segments of the media signal in parallel as claimed.

Claim 22 is now dependent on claim 20 and is patentable for the same reasons as claim 20.

Claim 29

Hawkins fails to teach: "a media signal pre-processor operable to receive a media object and divide the media object into segments for parallel watermark embedding operations" as claimed.

There is no teaching in Hawkins to divide a media object into segments for parallel watermark embedding operations. There is no teaching that a job is created by dividing a media object into segments. Hawkins refers to applying watermarks to requested images, but there is no teaching that the images are divided into segments to create a "job" or otherwise.

Claims 30 and 32-33

Claims 30-33 are patentable over Hawkins for the same reasons as claim 29. In addition, they include additional elements that further distinguish them from Hawkins. For example, Hawkins fails to teach prioritizing segments for embedding operations as set forth in claim 30, and Hawkins fails to prioritize segments for watermark embedding based on readability as set forth in claim 31.

Claim 16 is patentable over Hawkins in view of Peters

Claim 16

Regarding claim 16, Peters fails to teach the elements of claim 14 that are missing from Hawkins, and therefore, the combination of Peters and Hawkins does not teach all of the elements of claim 16, which depends from claim 14.

Claim 17 is patentable over Vynne and Kawaguchi

Claim 17

While Kawaguchi teaches embedding in certain bit planes, Kawaguchi does not teach: "wherein the media signal is segmented and prioritized based on bit planes." In fact, Kawaguchi

teaches that the image is segmented into spatial regions based on a complexity threshold. Vynne also fails to teach this aspect of claim 17, and therefore, the combined teachings of Kawaguchi and Vynne fail to teach all of the elements of claim 17.

The Examiner contends that watermarking on selected bit planes is a prioritization process. Selection of bit planes does not suggest that the selected bit planes are processed in a priority order as claimed.

Claim 34 is patentable over Shinoda and Vynne

Claim 34

Shinoda fails to teach any form of a batch watermark registration and embedding system. The cited passage relates to dealing with one web page at a time. In contrast, the system of claim 34 recites a batch registration extractor, for example, for reading the registration database and creating an embedder control file, including identifiers, a corresponding list of media signal files and embedding instructions for controlling embedding of the identifiers in the media signal files. In other words, the system and the embedder control file facilitate handling identifiers for a corresponding list of media signal files. Shinoda's system does not teach this capability. Vynne does not teach the elements of claim 34 missing from Shinoda. Therefore, the combination fails to teach all of the elements of claim 34.

In response, the Examiner suggests that Shinoda provides teachings that it does not have. The reference to web pages to which a mark is attached does not suggest that Shinoda uses a batch registration and embedding system as claimed. The examiner contends that "as long as, the pages are grouped as a job, it is a batch of files." However, neither Shinoda nor Vynne suggest that pages are grouped as a job. Therefore, this rejection should be withdrawn.

Respectfully submitted,

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DIGIMARC CORPORATION

CUSTOMER NUMBER 23735

By _____

Joel R. Meyer
Registration No. 37,677

Phone: 503-469-4800
FAX 503-469-4777